



National Aeronautics and Space Administration
Goddard Space Flight Center

Wallops Flight Facility, Wallops Island, Virginia

Inside Wallops

Volume XIX-99

Number 5

February 8, 1999

X-33, VentureStar, Metallic Heat Shield 'Ready For Flight'

Development of the X-33, VentureStar, took a step forward last month when one of three technologies essential to its success was declared "ready for flight".



Artist's Rendition

The rugged, metallic thermal-protection panels designed for NASA's X-33 technology demonstrator passed an intensive test series that included sessions in high-speed, high-temperature wind tunnels.

The panels also were strapped to the bottom of a NASA F-15 aircraft and flight-tested at nearly 1.5-times the speed of sound.

Additional laboratory tests duplicated the environment the X-33's outer skin will encounter while flying roughly 60 miles high at more than 13 times the speed of sound. Also, a thermal-panel fit test successfully demonstrated the ease of panel installation and removal. The thermal protection system combines aircraft and space-plane design, using easy-to-maintain metallic panels placed over insulating material.

As the X-33 flies through the upper atmosphere, the panels will protect the vehicle from aerodynamic stress and temperatures comparable to those a reusable launch vehicle would encounter while re-entering Earth's atmosphere. Tests have verified that the metallic thermal-protection system will protect vehicles from temperatures near 1,800 degrees Fahrenheit.

"NASA is focusing on creating a next generation of reusable launch vehicles that will dramatically cut the costs associated with getting into space," said Dan Dumbacher, NASA Marshall Space Flight Center, X-33 deputy program manager.

"By developing and proving these systems, we're creating the ability to

build space planes that eventually will fly to orbit, return for servicing, and launch again as often as today's commercial airplanes make scheduled flights," he added.

The remaining two technologies important for low-cost space access are an efficient propulsion system ideally suited to power a lifting body and, more importantly, lightweight-yet-strong composite cryogenic fuel tanks and structures to minimize vehicle weight. Work on those two challenging technologies continues as the X-33 program enters a phase of intense testing and qualification of the vehicle's components.

NASA expects the metallic thermal-protection panels — developed and built by team member BFGoodrich Aerospace/Aerostructures Group in Chula Vista, CA — to dramatically cut maintenance time and costs associated with more fragile thermal-tile systems. Because the metallic panels on the lower surfaces of the X-33 make up the vehicle's windward, aerodynamic structural shell, the system also will obtain significant weight savings over traditional thermal systems, while being much more durable and waterproof.

The X-33 is scheduled to make as many as 15 test flights from Edwards Air Force Base, CA, to Dugway Proving Ground, UT, and Malmstrom Air Force Base, MT, beginning in 2000. Although suborbital, the X-33 will fly high enough and fast enough to encounter conditions similar to those experienced on an orbital flight path to fully prove its systems and performance.

For the test flights, Wallops is providing mobile telemetry, command uplink, and flight termination systems. A 9-meter antenna system also is being provided. The Wallops systems will be used in Utah, Idaho and Montana.



President's Day will be observed Feb. 15.

Mission 2000 Review

The 1998 annual review on Mission 2000 is posted on the Wallops homepage: <http://www.wff.nasa.gov>

Hard copies are in the Public Affairs Newsletter stand at the entrance to the cafeteria.



Barbara Justis removes the vials from the Space Science and Technology Collaboration experiment provided by schools from Tennessee and South Carolina (above), while students with the Accomack County Gifted and Talented Program eagerly await the opening of their SEM canister by Charlie Lipsett (below).

Photos by Tom Burton.



Students and Teachers Participate in SEM Deintegration

Students and teachers from the northeastern and southern United States received their experiments that flew on the December 1998 Space Shuttle during a program at Wallops on Feb. 1.

This was the first time the nearly 70 student and teacher experimenters had seen their projects since returning from the December flight.

Local students that took part in the mission included: the Accomack County Talented and Gifted Program for grades one through three in conjunction with the Virginia Institute of Marine Sciences; elementary school students in the Horntown Educational Learning Project; one student attending Arcadia High School and one Nandua High School graduate who is now attending Old Dominion University.

In addition to the local participants, the program included teachers from the schools in the northeastern and southern United States that participated in the NASA Education Workshop at Wallops in the summer 1998 and their students.

Weather Summary

by Ted Wilz, Senior Meteorologist

What happened to winter?

The mild weather trend that began in November continued into January. The Eastern Shore has been able to escape most of the winter weather conditions that have touched parts of the mid-Atlantic and north-eastern United States.



For the third month in a row, temperatures were well above the normal range. The average temperature recorded during January was 41°, which is almost 6° above normal. While mid-January to mid-February usually provides the coldest weather experienced along the Eastern Shore, we've been enjoying temperatures in the 50's and 60's. We even set a new record high temperature of 69° on Jan. 28.

While temperatures have been mild and we've all saved on the heating bills, precipitation has been fairly abundant for the second month in a row. During January, almost four inches of rainfall was recorded, which is a little more than a quarter inch above normal. Fortunately for the fair weather folks, none of the precipitation was snow. The average snowfall for January is three inches.

Very seldom do we experience thunderstorms during January, but we did have that happen this year. Also worth noting is that we were very fortunate not to have any "Nor'Easter" storms that are famous for rearranging the mid-Atlantic coastline.

March usually brings an end to any major winter weather and threats of severe "Nor'Easters". That means the tropical storm threat and springtime thunderstorms are not far behind. High temperatures at the beginning of March usually average around 50°, rising to around 60° by the end of the month. The first part of March, we generally have low temperatures in the low to mid 30's increasing to around 40° as April approaches. The all-time low of 14° was set on March 4, 1996.

As temperatures warm during March with the approach of spring, average precipitation also increases to almost four inches. We usually have nine days with measurable precipitation during March courtesy of springtime showers and thunderstorms or a late season "Nor'Easter".

We have been most fortunate to have good weather so far this season, but don't forget that winter weather can seriously affect our weather well into March. The "Storm of the Century" which occurred in March 1993 is a good example of one of the worst late winter storms in recent years. Although winter seems to have passed us by, we should not let our guard down.



John Brinton (Wallops Environmental Office), Dick Bradford (Carrier Systems Branch) and Dave Pierce (University Class Projects Office) (left to right) chat during the Employees Morning Coffee on Feb. 3. Digital photo by Rick Huey.

4.4% Year 2000 Pay Raise Proposed

from the Feb. 3 issue of FEDweek

As expected, the Clinton administration budget provides for a 4.4% federal pay raise next year. Already federal employee groups are pushing for a greater amount.

Traditionally, pay raises for federal employees and military personnel have been linked, but that link has been an on-again, off-again thing. The Senate Armed Services Committee has recommended a 4.8% year 2000 military raise and has endorsed the concept of parity with civil service workers.

It is expected that federal unions will demand a raise even higher than 4.8%, but that might provide a starting figure in any pay discussions. The 2000 federal employee raise will be determined later this year after talks among key members of Congress, the White House and federal unions.

G Fund Rate 5%

Money in the thrift savings plan government securities G fund is being invested this month at the rate of 5%, the same as in January.

Published weekly, *FEDweek* is posted on the web: <http://www.fedweek.com>

Sympathy is extended
to the family and friends of
Claude White
who died Feb. 2
at Shore Memorial Hospital.

White retired in 1994 as a
construction representative in the
Facilities Management Branch.

DAYTONA 500 PARTY February 14, 1999 See It On The Big Screen

Bldg. F-3
Doors Open: 11 a.m.

Admission: Covered dish or other food
Register names of any guests with:
Charlie Randall @ x1890, Terry Ewell
@ x1133 or Sandy Gunter @ x1454

Congratulations

 to the winners in
the Super Bowl
Chili Cook-off:
First Place
Jose Gutierrez
(NOAA)
Second Place
Glenn Maxfield (Litton/PRC)

Third Place
Mike Barnhill (CSC)

Upcoming Courses

The following courses will be held at Wallops and are Center funded.

Effective Writing

March 8 and 9 — 9 a.m. to 4 p.m.

March 10 — 9 a.m. to noon

For more information go to:

<http://ohr.gsfc.nasa.gov/gsfc/training/Annualcal/COMM.HTM#comm13>

Making Meetings Work

Date: March 11

Time: 9 a.m. to noon

For more information go to: <http://ohr.gsfc.nasa.gov/gsfc/training/Annualcal/COMM.HTM#comm18>

For Sale

Exercise machine, Cardio Glide Plus, like new, \$89 or best offer. Call (757) 787-7290 after 5 p.m.

1992 Pontiac Bonnyville. Excellent condition. Love seat and sofa, 1 year old. Excellent condition. Call (757) 787-1558 after 5 p.m.

Inside Wallops is an official publication of Goddard Space Flight Center and is published by the Wallops Office of Public Affairs, Extension 1584, in the interest of Wallops employees.

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Photography
Printing

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